

REMARKS

Claims 1-25 are pending in the present application. Claims 1, 13 and 25 are independent. Claim 25 has been added to more particularly define what Applicants regard as their invention.

Drawing Objections

Figures 1 and 2 are objected to because they should allegedly be designated by a legend such as "Prior Art." This objection is respectfully traversed.

With respect to Figures 1a and 1b, Applicants agree that these Figures illustrate only that which is old and have added the appropriate label "Conventional Art" thereto. Replacement sheets have been filed to add the appropriate label to Figures 1a and 1b.

Figure 2, however, illustrates aspects of the invention and not the conventional art. See the detailed specification for further details.

Therefore, Applicants respectfully request reconsideration and withdrawal of the drawing objection as well as entry of the proposed drawing correction.

Specification Objection

Applicants appreciate the Examiner's suggestion to correct minor informalities on page 1. Applicants have submitted specification amendments to correct these minor informalities.

In addition, Applicants have reviewed the remainder of the specification for any other such minor errors and corresponding amendments are submitted above to correct them. Thus, the specification objection is respectfully traversed and Applicants respectfully request reconsideration and withdrawal thereof.

35 U.S.C. § 112, First Paragraph Rejection

Claims 9-12 and 17-24 are rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the enablement requirement. This rejection is respectfully and strenuously traversed.

Applicants find this rejection very confusing and respectfully suggest that it is based upon a misreading of the specification and claims. The Office Action alleges that the equation for the indicator value in claims 9 and 17 does not concur with the specification, specifically on page 18, lines 23-24. This is clearly incorrect as the indicator value equation described on page 18, lines 23-24 has been copied verbatim into claims 9 and 17. It is simply not understood how there can be any lack of concurrence between these two equation definitions as they match exactly. In response to the Office Action's specific allegation that the word "and" should be changed to "or", Applicants respond that such a change is not necessary as

the descriptions in the claims and specification are verbatim copies that match exactly.

Applicants further find the lack of examination of claims 10-12 and 18-24 to be improper. The alleged basis for non-examination is the alleged § 112, first paragraph issue discussed above. Even if this allegation were somehow correct, which it is clearly not, ignoring claim language in this fashion is procedurally incorrect.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112, first paragraph rejection.

35 U.S.C. § 112, Second Paragraph Rejection

Claims 11, 12, and 20-22 are rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

The Office Action cites three separate terms and states that they are rejected because they are "not clearly defined or explained in the claims." The three allegedly indefinite terms are "total count", "second threshold" and "third threshold." Each of these terms will be discussed in turn.

With respect to the "total count" term, which appears in claims 12 and 22, the Examiner is respectfully referred to the

claim language as filed. Specifically, the term "total count" is defined as being the sum of ones + zeros. The terms "ones" and "zeros" are defined in antecedent claims 9 and 17: specifically, the term "ones" is defined as the number of corrected ones in the output data signal and the term "zeros" is explicitly defined as the number of corrected zeros in the output data signal. Thus, further defining a "total count" variable as the sum of "ones" and "zeros", provides a very concise and clear definition for this term. It is not understood how the definition for the term "total count" could be improved even if it were somehow indefinite which it clearly is not.

With respect to the terms "second threshold" and "third threshold", the Examiner has already correctly interpreted these terms as being a variable in an equation. Since the Examiner correctly interpreted these two terms as evidenced by the statements made in the Office Action, these terms are very clearly definite. Therefore, no amendment is necessary.

As is clear from the arguments above, the 35 U.S.C. § 112, second paragraph rejection is improper and should not have been made in the first instance. Therefore, it should be reconsidered and withdrawn and Applicants respectfully request that this be done.

35 U.S.C. § 103 Sobiski/Barnard Rejection

Claims 1-8 and 13-16 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sobiski (USP 6,487,352) in view of Barnard (USP 6,115,157). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

The Office Action evidences an apparent and complete lack of understanding of the invention. The main reference, Sobiski, is not even as good as the admittedly conventional art discussed in the background of the invention. Sobiski is directed to a completely different problem than the problems addressed by the present invention and fails to even offer any device, technique or even vague hint that is anywhere close to the inventive concepts. Sobiski is directed to a chromatic dispersion compensator, which is most certainly not the subject of the present invention.

The present invention is directed to a optical receiver, not a chromatic dispersion compensator. Optical receivers have as their goal to accurately convert an optical signal into an electrical signal while reducing the number of bit errors made during the conversion. In stark contrast, chromatic dispersion compensators seek to reduce the amount of chromatic dispersion that may be present in an optical signal. Although chromatic dispersion compensators may improve the signal to be detected by

an optical receiver, these two elements are entirely distinct, a fact which is either ignored or not recognized in the Office Action.

Lying at the very heart of the invention is the error detection and correction circuit, which is something the Office Action admits is not explicitly disclosed in Sobiski. Indeed, it is not understood why Sobiski is applied at all.

The Barnard patent is at least within the inventive field of optical receivers but still fails to disclose or suggest the invention as claimed. Barnard does indeed disclose an optical receiver and even adjusts the threshold level V_{Th} with a controller 6 so as to reduce the BER (Bit Error Rate). As discussed in the cited section of column 5, Barnard determines a total error count or bit error rate that is fed to a performance monitor 7. It is emphasized that the error detector 4 of Barnard, merely outputs or counts the total number of errors that have been corrected and fails to distinguish between corrected zeros (a bit that was mistakenly assigned a binary "0" value) and corrected ones (a bit that was mistakenly assigned a binary "1" value) as in the present invention.

More particularly, Barnard fails to disclose or suggest an error detection in correction circuit that provides an error signal representative of the number of corrected ones and the number of corrected zeros in an output data signal. Barnard's

error detector 4 merely counts the total number of errors and fails to distinguish between corrected ones and corrected zeros.

Even if Barnard did so distinguish between corrected zeros and corrected ones, Barnard further fails to disclose or suggest a control circuit that calculates a relative percentage error indicator based on the error signal. Recall that the term "error signal" has been defined in the claims as being representative of a number of corrected ones and a number of corrected zeros. Thus, the control circuit calculates a relative percentage error indicator based on the number of corrected ones and number of corrected zeros. Barnard completely fails to disclose or suggest any such calculation or concept.

Even if Barnard did somehow disclose such a relative percentage error calculation, Barnard further fails to disclose or suggest adjusting the decision threshold (used by the comparator to decide between logical ones and logical zeros during the optical to electrical conversion) in response to the relative percentage error indicator. In other words, the relative percentage error indicator is utilized as a basis to adjust the decision threshold signal. No such adjustment is made by Barnard. At best, Barnard changes the threshold so as to reduce the BER value, which is a concept completely different than the relative percentage error indicator or the adjustment

of a decision threshold signal in response to a relative percentage error indicator, further as recited in claim 1.

In terms of claim 13, Barnard also fails to disclose or suggest a method of reducing bit errors in digital data output signal output from an optical receiver. Specifically, Barnard fails to disclose or suggest calculating a relative percentage error indicator based on the number of corrected ones and number of corrected zeros in the output data signal. Barnard further fails to disclose or suggest adjusting the decision threshold signal used by the comparator in response to the calculated relative percentage error indicator. No such calculation or adjustment of a decision threshold signal is disclosed or suggested by Barnard.

Returning to Sobiski, Sobiski is not even within the field of invention and does not even include any type of receiver, let alone the type of optical receiver claimed. Because neither Sobiski nor Barnard discloses or suggests specific features of the claimed invention, the combination thereof also fails to disclose or suggest the claimed invention.

Furthermore, motivation for combining Barnard and Sobiski is completely lacking. The only motivational statement offered by the Office Action is that using the error system of Barnard with the chromatic dispersion compensator device of Sobiski would have somehow been obvious as suggested by Barnard "in

order to increase performance rates." While it is true that reducing the BER rate is laudable and often-sought goal, it is not understood how the combination of Sobiski and Barnard accomplishes this purpose, particularly in relation to the rejection being made. Applicants would agree that a chromatic dispersion compensator may clean up the signal so as to reduce error rates in Barnard's receiver, but such a combination is completely beside the point. Chromatic dispersion forms no part of the present invention and combining Sobiski's dispersion compensator with Barnard's optical receiver takes no step whatsoever toward the invention and certainly does not disclose or suggest the features particularly recited in independent claims 1 and 13.

Indeed, the apparent weakness of the art discovered and applied in the Office Action leads Applicants to believe that a much broader scope of claim coverage is available. Thus, Applicants have submitted new claim 25, which more broadly recites the invention in a manner that defines over the art of record.

As to the dependent claim features, Applicants reserve the right to challenge the allegations made in the Office Action. In other words, Applicants wish to focus the patentability on the independent claims. Although many inaccuracies and misstatements are contained in the Office Action with regard to these

dependent claims, Applicants believe that the independent claims fully and adequately distinguish the invention from all of the applied art.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103 Sobiski/Barnard rejection.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment(s): two (2) sheets of Replacements drawings